

## 8-port Asynchronous/Synchronous Serial GRWIC for the Cisco 2010 Connected Grid Router

The Cisco® Connected Grid portfolio of solutions is designed specifically for the harsh, rugged environments often found in the energy and utility industries. These solutions include the Cisco 2010 Connected Grid Router (CGR 2010) and the Cisco 2520 Connected Grid Switch (CGS 2520), which have been designed to support the communications infrastructure needs of the energy delivery infrastructure across the generation, transmission, and distribution sectors. This infrastructure includes utility- and customer-owned energy infrastructure such as substation applications supporting electrical transmission and distribution, renewable generation, oil and gas, water, distributed generation, co-generation, and trackside operations. The infrastructure also includes communications infrastructure for delivery applications such as transmission pipelines, distribution mains, and service lines for oil and gas and water. Designed for highly secure, reliable, and scalable infrastructure, the CGR 2010 and CGS 2520 are an ideal platform to support the Smart Grid and other energy delivery infrastructure needs of customers. These ruggedized products have been extensively tested and are KEMA certified to meet challenging substation compliance standards, including IEEE 1613 and IEC 61850-3.

The 8-port Asynchronous/Synchronous Grid Router WAN Interface Card (GRWIC) provides low-speed synchronous/asynchronous serial connections supporting EIA-RS232 for the Cisco CGR 2010. The 8-port serial RS-232 GRWIC helps customers to enable applications such as legacy protocol transport, console server, and dial access server. Combining a high-density serial GRWIC with the Cisco CGR 2010 enables energy networks to transport mission-critical communication such as Supervisory Control and Data Acquisition (SCADA) over an IP network.

**Figure 1.** 8-port Asynchronous/Synchronous GRWIC



## Common Applications

These highly flexible interface cards enable several important applications.

### Legacy Protocol Transport

For example, utility companies are migrating their substations from serial to ethernet communications. Given the amount of serial communications that exist in substations today, the migration will take place over a number of years. An 8-port Async/Sync serial module in the Cisco CGR 2010 helps utilities to transport legacy SCADA traffic across a TCP/IP network. The serial interfaces provide a converged communications solution while utilities migrate from serial-based Remote Terminal Units (RTUs) to ethernet-enabled RTUs and Intelligent Electronic Devices (IEDs). This capability enables network convergence, eliminating costly separate leased lines for this traffic.

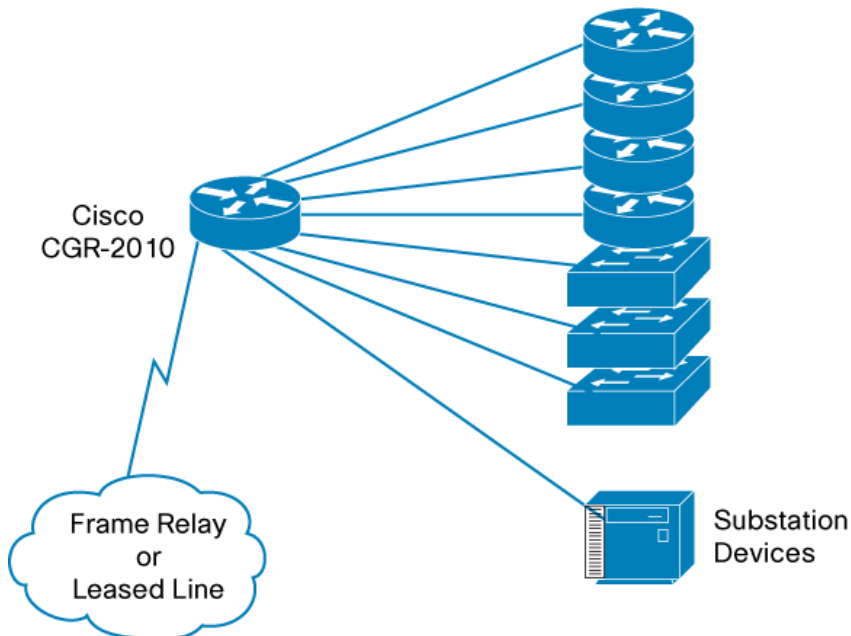
Legacy protocols supported by Cisco IOS<sup>®</sup> Software include:

- Bi-Synchronous Tunnel Protocol (BSTUN)
- Systems Network Architecture (SNA) and Synchronous Data Link Control (SDLC) Protocol
- Binary Synchronous Communications Protocol (Bisync)

### Console and Terminal Server

Asynchronous ports provide highly flexible connections that allow access to EIA-232 devices across a TCP/IP network. This access allows out-of-band management to console or craft ports, enabling the network operator to manage a network of remote devices from a central location (Figure 3).

**Figure 2.** Managing Multiple Remote Devices from a Single Location



## Connectors and Cabling

The 8-port serial GRWIC has connectors and cabling that allow high port densities in the compact GRWIC form factor. Table 1 show connector and cabling specifications.

### High-Density Synchronous/Asynchronous Cabling

The 8-Port Asynchronous/Synchronous GRWIC uses two high-density 4-port connectors. Each connector supports four ports of EIA-232 with data communications equipment (DCE) or data terminal equipment (DTE) interfaces. All four ports on one cable use the same DTE/DCE mode. Table 1 outlines the cable specifications for the 8-Port Async/Sync RS-232 GRWIC.

**Table 1.** High-Density Synchronous/Asynchronous Cabling for the 8-port Async/Sync RS-232 GRWIC

Product Number	Cable Type	Length	Connector Type
CAB-HD4-232FC	4-port EIA-232 DCE	10 ft (3 m)	Female DB-25
CAB-HD4-232MT	4-port EIA-232 DTE	10 ft (3 m)	Male DB-25
CAB-QUAD-ASYNC-F	4-port EIA-232 DTE	18 in (0.46 m)	Female RJ-45
CAB-QUAD-ASYNC-M	4-port EIA-232 DTE	10 ft (3 m)	Male RJ-45
CAB-9AS-M	4-port EIA-232 DTE	10 ft (3 m)	Male DB-9

## Platform Support

The 8-port Asynchronous/Synchronous RS-232 GRWIC is a ruggedized module supported on the Cisco Connected Grid Router 2000 Series. It is not supported on the ISR-G2 family of routers. Table 2 outlines the minimum Cisco IOS Software release support for this GRWIC module.

**Table 2.** Minimum Cisco IOS Software Release Supported

	Cisco 2935R Integrated Services Router
Minimum IOS Release	15.1(1)T
Minimum IOS Technology Package	IP Base

## Specifications

The specifications of the 8-port Async/Sync RS-232 GRWIC are listed in Table 3.

**Table 3.** GRWIC Specifications

Specification	HWIC-8A/S-232
Synchronous Support	Yes
Synchronous Maximum Speed (per port)	256 kbps
Asynchronous Support	Yes
Asynchronous Maximum Speed (per port)	230.4 kbps
Bisync Support	Yes
Serial Protocols	EIA-232
Lead Manipulation	Yes
Network Clock Synchronization	Yes

## Common Specifications

The specifications listed below apply to the 8-port Async/Sync RS-232 GRWIC.

Feature	Specification
<b>Environmental Specifications</b>	
<b>Operating Conditions</b>	
Environmental Substation Compliance	IEC-61850-3 IEEE1613
Operating Temperature	-40 °F to 140°F (-40 to +60°C) continuous operating temperature range -40 °F to 185°F (-40 to +85°C) type test for 100 hours at 85°C
Shock/Vib	30G @11 ms
Altitude	10,000 ft (3,048 m) Max operating temp is de-rated with increasing altitude per IEEE1613a-2008
Relative Humidity	5 to 95% non-condensing
<b>Non-operating Conditions</b>	
Temperature	-40°F to 185°F (-40°C to 85°C)
Relative Humidity	5 to 95% non-condensing
Altitude	16,000 ft (4,876 m) Max operating temp is de-rated with increasing altitude per IEEE1613a-2008
Non-Op Free Fall Drop	4in. (100 mm) per ENG-339611
Operating Seismic/Earthquake	NEBS GR-63 (5.4.1)
Non-Op Shock/Vib	40-50G (3.26 m/s minimum)
<b>Regulatory Compliance and Safety*</b>	
Immunity	EN61000-6-2 EN61000-4-2 (ESD) EN61000-4-3 (RF) EN61000-4-4 (EFT) EN61000-4-5 (SURGE) EN61000-4-6 (CRF) EN61000-4-11 (VDI) EN 55024, CISPR 24 EN50082-1
EMC	47 CFR, Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI V-3 CNS 13438 EN 300-386
Safety	USA: UL 60950-1 Canada: CAN/CSA C22.2 No. 60950-1 Europe: EN 60950-1 China: GB 60950-1 Australia/New Zealand: AS/NZS 60950-1 Rest of World: IEC 60950-1 CSA certified to UL/CSA 60950-1, 2nd Ed. CB report to IEC60950-1, 2nd Ed., covering all group differences and national deviations

Feature	Specification
Telecom	US: TIA-968-A CA: CS-03 EU: TBR1, 2, 4, 12, 13 RTTE Directive Australia: AS/ASIF S016, S038 Japan: JATE
Telecom Interface Standards	RS-232 GRWIC: RS232, ITU-T V.11
<b>Physical Specifications</b>	
Form Factor	Single-wide GRWIC, no slot restrictions
Dimensions	2.52 x 3.0 x 7.81 in. (6.4 x 7.6 x 19.8 cm)
Weight	0.84 lb (0.38 kg)

\* For more information, consult the Product Approval Database <http://www.cisco.com> or consult your local Cisco representative (Cisco.com login required).

## Product Part Numbers

Connected Grid Router WIC	
<b>GRWIC-8A/S-232</b>	8-Port Async/Sync Serial GRWIC, EIA-232
<b>GRWIC-8A/S-232=</b>	8-Port Async/Sync Serial GRWIC, EIA-232, spare

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For more information on the Cisco CGR 2010 please visit: <http://www.cisco.com/go/cgr2000>



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